

APPENDIX E

TEMP DROP CODE

EXTRACT FROM: WMO-No. 306 MANUAL ON CODES

FM 37-IX Ext. TEMP DROP - Upper-level pressure, temperature, humidity and wind report from a sonde released by carrier balloons or aircraft. Figure E-1 is an example TEMP DROP message.

CODE FORM:

PART A

SECTION 1 $M_i M_i M_j M_j$ $YYGGI_d$ $99L_a L_a L_a$ $Q_c L_o L_o L_o L_o$ $MMMU_{L_a} U_{L_o}$

SECTION 2 $99P_o P_o P_o$ $T_o T_o T_{ao} D_o D_o$ $d_o d_o f_o f_o f_o$

$P_i P_i h_i h_i h_i$ $T_i T_i T_{ai} D_i D_i$ $d_i d_i f_i f_i f_i$

$P_n P_n h_n h_n h_n$ $T_n T_n T_{an} D_n D_n$ $d_n d_n f_n f_n f_n$

SECTION 3 $88P_t P_t P_t$ $T_t T_t T_{at} D_t D_t$ $d_t d_t f_t f_t f_t$

or
88999

SECTION 4 $77P_m P_m P_m$ $d_m d_m f_m f_m f_m$ $(4v_b v_b v_a v_a)$

or
 $66P_m P_m P_m$ $d_m d_m f_m f_m f_m$ $(4v_b v_b v_a v_a)$
or
77999

SECTION 9 51515 (through 59595) Code groups to be developed regionally.

SECTION 10 61616 (through 69696) Code groups to be developed nationally.

PART A

SECTION 1 - IDENTIFICATION AND POSITION

$M_i M_i$ Identification letters of the report = XX

$M_j M_j$ Identification letters of the part of the report = AA

YY Day of the month (GMT). When wind data are included 50 is added to YY.

GG Actual time of the observation, to the nearest whole hour (GMT).

I_d Highest mandatory level for which wind is available. 7=700 mb, 5=500 mb, etc. If flight level is above a standard surface, for example 495, report a 5 for 500 mb in the I_d group.

Note the following clarification was approved at the 52d IHC: I_d will specify in hundreds of mb (Part A) or tens of mb (Part C) the highest mandatory isobaric level for which the wind is reported. For example, in Part A, $I_d = 7$ indicates 700 mb, but in Part C, $I_d = 7$ indicates 70 mb. $I_d = 0$ refers to the 1000 mb level. The surface wind group should always be present.

- (1) The wind group shall be omitted at all levels above the level specified by I_d , except as noted in (3) and (4) below.
- (2) The wind group shall be present at all levels at and below the level specified by I_d . At levels below that specified by I_d for which the wind is missing, encode the wind group as "////.".
- (3) When the highest mandatory level for which the wind is reported is 250 mb, encode I_d as 2. If other information is available above 250 mb, encode the 200 mb wind group as "////.".
- (4) When the highest mandatory level for which the wind is reported is 150 mb, encode I_d as 1. If other information is available above 150 mb, encode the 100 mb wind group as "////.".
- (5) When no winds are reported for any level, encode I_d as "/", encode the surface wind group as "////," and omit all wind groups above the surface.

99 Indicator for data on position follow.

$L_a L_a L_a$ Latitude, in tenths of a degree.

Q_c Quadrant of the globe. The earth is divided by the Greenwich meridian and the equator into quadrants. The code figure reported depends on the latitude and longitude of the observation position.

$L_o L_o L_o L_o$ Longitude, in tenths of a degree.

MMM Marsden square. The number of the marsden square for aircraft position at the time of the observation is reported for MMM. Always report three digits for MMM, with zeros reported for the hundreds and tens digits when required. When an observation is within a depicted 10 degree square, report the number of that square. When on an even 10 degree latitude or longitude circle, the marsden square for MMM is obtained by moving in the direction of larger latitude and/or longitude. EXAMPLE: Assuming a position of 18.1N, 131.4W, MMM is 050; assuming a position of 30.0N, 140.0E, MMM is 130. At the equator or on the prime meridian, report the marsden square compatible with the Q_c reported.

U_{La} Units digit in the reported latitude.

U_{Lo} Units digit in the reported longitude.

SECTION 2 - SURFACE AND STANDARD ISOBARIC SURFACES

99 Indicator for data for the surface level follow.

$P_o P_o P_o$ Pressure of specified levels in whole millibars, thousands digits omitted. ($P_o P_o P_o$ is always surface level.)

$P_i P_i$ Pressure of standard isobaric surfaces in units of tens of millibars. (1000mbs=00,
 $P_n P_n$ 925mbs=92, 850mbs=85, 700mbs=70, etc.)

$h_i h_i h_i$ Height of the standard pressure level in geopotential meters or decameters above the surface. Encoded in meters up to but not including 500mbs. Encoded in decameters at and
 $h_n h_n h_n$ above 500mbs omitting, if necessary, the thousands or tens of thousands digits. Add 500 to hhh for negative 1000mb heights. Report 1000mb groups as 00/// //// when surface pressure is less than 950mbs.

$T_o T_o$ Tens and units digit of air temperature (not rounded off) in degrees Celsius, at specified
 $T_i T_i$ levels beginning with surface.
 $T_n T_n$

| | |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| T_{ao} | Approximate tenths value and sign (plus or minus) of the air temperature. |
| T_{al} | Even = plus; Odd = minus. |
| T_{an} | |
| D_oD_o | Dewpoint depression (with respect to water) at standard isobaric surfaces beginning with surface level. When the depression is 4.9C or less encode the units and tenths digits of the depression. Encode depressions of 5.0C through 5.4C as 50. Encode depressions of 5.5C through 5.9C as 56. Dewpoint depressions of 6.0C and above are encoded in tens and units with 50 added. Dewpoint depressions for relative humidities less than 20% are encoded as 80. When air temperature is below -40C report D_nD_n as two solidi. |
| D_lD_l | |
| D_nD_n | |
| $d_o d_o$ | True direction from which wind is blowing rounded to nearest 5 degrees. Report hundreds and tens digits. The unit digit (0 or 5) is added to the hundreds digit of wind speed. |
| $d_l d_l$ | |
| $d_n d_n$ | |
| $f_o f_o$ | Wind speed in knots. Hundreds digit is sum of hundreds digit of speed and unit digit of direction, i.e. $29\overline{5}^\circ$ at $\underline{1}25$ kts encoded as $29\overline{6}25$. (Notes 1&2) |
| $f_l f_l$ | |
| $f_n f_n$ | |

NOTE: 1. When flight level is just above a standard surface and in the operator's best meteorological judgement, the winds are representative of the winds at the standard surface, then the operator may encode the standard surface winds using the data from flight level. If the winds are not representative, then encode /////.

2. The wind group relating to the surface level ($d_o d_o f_o f_o$) will be included in the report; when the corresponding wind data are not available, the group will be encoded/////.

SECTION 3 - DATA FOR TROPOPAUSE LEVELS

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|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 88 | Indicator for data for tropopause level(s) follow. |
| $P_t P_t$ | Pressure at the tropopause level reported in whole millibars. |
| $T_t T_t$ | Air temperature in whole degrees Celsius, at the tropopause level. |
| T_{at} | Approximate tenths value and sign (plus or minus) of the air temperature at the tropopause level. |
| $D_t D_t$ | Dew point depression at the tropopause level. |
| $d_t d_t$ | True direction at the tropopause level rounded to nearest 5 degrees. Report hundreds and tens digits. The unit digit (0 or 5) is added to the hundreds digit of wind speed. |
| $f_t f_t$ | Wind speed in knots. Hundreds digit is sum of hundreds digit of speed and unit digit of direction, i.e. $29\overline{5}^\circ$ at $\underline{1}25$ kts encoded as $29\overline{6}25$. |
| 88999 | Indicator that tropopause data have not been observed. |

SECTION 4 - MAXIMUM WIND DATA

- 66 Indicator that data for maximum wind level and for vertical wind shear follow when max wind occurs at flight level.
- 77 Indicator that data for maximum wind level and for vertical wind shear follow when max wind level does not coincide with flight level.
- $P_m P_m P_m$ Pressure at maximum wind level in whole millibars.
- $d_m d_m$ True direction from which wind is blowing at the maximum wind level rounded to nearest 5 degrees. Report hundreds and tens digits. The unit digit (0 or 5) is added to the hundreds digit of wind speed.
- $f_m f_m f_m$ Wind speed in knots. Hundreds digit is sum of hundreds digit of speed and unit digit of direction, i.e. 295° at 125 kts encoded as 29625.
- 4 Data for vertical wind sheer follow.
- $v_b v_b$ Absolute value of vector difference between max wind and the wind 3000 feet BELOW the level of maximum wind, reported to the nearest knot. Use "/" if missing and 4 group is reported. A vector difference of 99 knots or more is reported with the code figure "99".
- $v_a v_a$ Absolute value of vector difference between max wind and the wind 3000 feet ABOVE the level of maximum wind, reported to the nearest knot. Use "/" if missing and 4 group is reported. A vector difference of 99 knots or more is reported with the code figure "99".
- 77999 Indicator that maximum wind data have not been observed.

SECTION 10 - NATIONAL PRACTICES

- 61616 Mission identifier followed by the observation number and the four-letter ICAO identifier for the station that copied and disseminated the observation (e.g., 61616 NOAA9 0403A CLAUDETTE OB 01 KWBC)
- 62626 National practice group indicator preceding a free form character string containing specific sonde or mission-related remarks; e.g., EYEWALL, SST28.2, SFC WND AT 7M. Other types of remarks include:

| | |
|-------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| EYE | (sonde released above surface center) |
| EYEWALL 030 | (sonde released in the eyewall at the 3 digit bearing from the eye fix) |
| FLT LVL CEN | (sonde released at the flight level center) |
| RAINBAND | (sonde released in a rainband) |
| SPL 2030N 6220W | (splash location of the sonde) |
| LAST REPORT OBS 01 THRU 30 TO KNHC (last observation report for this mission) | |

CODE FORM:

PART B

SECTION 1 $M_i M_j M_j M_j$ YYGG/ 99 $L_a L_a L_a$ $Q_c L_o L_o L_o$ $MMM U_{La} U_{Lo}$

SECTION 5 $n_o n_o P_o P_o P_o$ $T_o T_o T_{ao} D_o D_o$

$n_i n_i P_i P_i P_i$ $T_i T_i T_{ai} D_i D_i$

$n_n n_n P_n P_n P_n$ $T_n T_n T_{an} D_n D_n$

SECTION 6 21212 $n_o n_o P_o P_o P_o$ $d_o d_o f_o f_o f_o$

$n_i n_i P_i P_i P_i$ $d_i d_i f_i f_i f_i$

$n_n n_n P_n P_n P_n$ $d_n d_n f_n f_n f_n$

SECTION 7 31313 $s_r r_a r_a s_a s_a$ 8GGgg

SECTION 9 51515 101 $A_{df} A_{df}$ or

 101 $A_{df} A_{df}$ 0 $P_n P_n P'_n P'_n$ or

 101 $A_{df} A_{df}$ $P_n P_n h_n h_n h_n$

SECTION 10 61616 Repeat national practice encoded in Part A.
 62626 Repeat national practice encoded in Part A.

PART B

SECTION - 1 IDENTIFICATION AND POSITION

$M_j M_j$ Identification letters of the part of the report = BB.

/ Filler figure for last digit of YYGG group. No wind groups reported for any of the significant isobaric surfaces.

All other groups are the same as reported in Part A - Section 1

**SECTION 5 - DATA FOR SIGNIFICANT TEMPERATURE
AND RELATIVE HUMIDITY LEVELS**

$n_o n_o$ Number of level, starting with surface level. Only surface level will be numbered as "00."
 $n_i n_i$ When a standard level is also selected as significant, repeat the level in section 5. Encode
 $n_n n_n$ significant levels to indicate missing data as nn/// ////.

$P_o P_o P_o$ Pressure at specified levels in whole millibars, beginning with surface.
 $P_i P_i P_i$
 $P_n P_n P_n$

Temperature and humidity data groups are reported in the same manner as the temperature and humidity data in Part A - Section 2.

SECTION 6 - DATA FOR SIGNIFICANT WIND LEVELS

21212 Data for significant levels with respect to wind follow. Wind data groups are reported in the same manner as the wind data in Part A - Section 2.

SECTION 7 - SOUNDING SYSTEM INDICATION

31313 Data on sounding system.

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|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| s_r | Identifies solar and infrared radiation correction. Always report as zero--no correction. |
| $r_a r_a$ | Identifies dropsonde/sounding system used. Always report as "96"--descending radiosonde. |
| $s_a s_a$ | Identifies tracking technique/status of system used. Reported as "00" or "08." "0" - Aircraft system has no windfinding capability. "8" - Automatic satellite navigation. |
| 8 | Indicator for time of observation. |
| GGgg | Actual time of dropsonde launch in hours (GG) and minutes (gg) UTC. |

SECTION 9 - ADDITIONAL DATA GROUPS

101A_{df} A_{df} Specifications of regional additional data being reported.

| | |
|-------------|----------------------------------------------------------------------------------------|
| 0 | Group indicator. |
| $P_n P_n$ | Pressure of specified levels in tens of millibars. (1007 mb=01, 945 mb=95, 726 mb=73). |
| $P'_n P'_n$ | |

$P_n P_n h_n h_n h_n$ Data reported in the same manner as in Part A - Section 2.

51515 Additional data in regional code follow.

10166 Geopotential data are doubtful between the following levels, $0P_n P_n P'_n P'_n$. This code figure is used only when geopotential data are doubtful from a level to termination of the descent. NOTE: When radar altimeter is inoperative and surface reference is used, or if the ARWO advises that geopotential platform data is doubtful, a 10166 is reported for the entire run.

10167 Temperature data are doubtful between the following levels: $0P_n P_n P'_n P'_n$. This code figure shall be reported when only temperature data are doubtful for a portion of the descent. If a 10167 group is reported a 10166 will also be reported. EXAMPLE: Temperature is doubtful from 540mbs to 510mbs. SLP is 1020mbs. The additional data groups would be: 51515 10166 00251 10167 05451.

10190 Extrapolated altitude data follows:

1. When the sounding begins within 25mbs below a standard surface, the height of the surface is reported in the format 10190 $P_n P_n h_n h_n h_n$. The temperature group is not reported. EXAMPLE: Assume the release was made from 310mbs, and the 300mb height was 966 decameters. The last reported standard level in Part A is the 400mb level. The data for the 300mb level is reported in Part B as 10190 30966.

2. When the sounding does not reach surface but terminates within 25mbs of a standard surface, the height of the standard surface is reported in Part A of the code in standard format and in Part B of the code in the format 10190 $P_n P_n h_n h_n h_n$. EXAMPLE: Assume termination occurred at 980mbs, and the

extrapolated height of the 1000mb level was 115 meters. The 1000mb level would be reported in Part A of the code as 00115 ///// and in Part B as 10190 00115.

- 10191 Extrapolated surface pressure precedes. Extrapolated surface pressure is only reported when the termination occurs between 850mbs and surface. Surface pressure is reported in Part A as 99P_oP_oP_o ///// and in Part B as 00P_oP_oP_o //. When surface pressure is extrapolated, the 10191 group is the last additional data group reported in Part B.

FIGURE E-1. Example TEMP DROP Message.

UZNT13 KWBC 141910
XXAA 64193 99272 70775 08077 99017 27657 11003 00146 26456 07505 92829 20844 03501 85557 16659
00000 70183 07260 ///// 50587 08156 23007 40757 19166 22014 30965 34964 17018 25089 45163 20234 579//
88999 77999
61616 NOAA9 0403A CLAUDETTE OB 01 KWBC
62626 EYEWALL, SST28.2, SFC WIND AT 7M

XXBB 6419/ 99272 70775 08077 00017 27657 11956 22837 22872 17650 33832 16063 44789 12444 55704
07458 66692 06867 77658 04062 88640 03070 99598 00956 11588 01363 22578 02336 33559 04327 44528
06350 55520 06961 66513 07347 77492 08759 88482 09957 99460 11759 11410 17957 22401 18966 33393
20162 44381 21569 55361 24364 66353 25570 77318 31359 88302 34564 99238 47962 11192 605//
21212 00017 11003 11435 22512 22419 20510 33397 22014 44330 16017 55292 18017 66270 16521 77192
19014
31313 09608 81833
61616 NOAA9 0403A CLAUDETTE OB 01 KWBC
62626 EYEWALL, SST28.2, SFC WIND AT 7M
NNNN